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"THE JOURNAL"

Official Organ of the

AUSTRALIAN MODEL RAILWAY ASSOCIATION

For All Who Are Interested in Scale
Model Railroading

-:-:-:-:-:-:-:-:-

-Member Australian Standards Association-

Affiliated with the Australian Association of
Model Societies.

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EDITORIAL

One cannot help but wish that the International amity which exists in the patience-teaching and tolerance-breeding hobby of modelling could not infuse itself into the very relationships themselves of nation for nation in this unhappy world.

In our hobby we are all individuals with complete freedom of thought or action - we can go 6" live steam or flea gauge TT, we can adhere to standards, or adopt our own. But if we do decide for Standards we can rest assured they are receiving the thought and attention of the best brains in the hobby in each country in the world where modelling merits serious consideration.

This train of thought was set off by the receipt by this Association, of two most interesting sets of documents from West Berlin.

The first is simply a condensation of the history of the evolution of model railway gauges, and scales allied thereto, as seen through German eyes, whilst the second is the report of the most recent Continental conference on the question of Standards for Europe.

The former is more than just interesting reading, and the Standards, compiled with Teutonic thoroughness in the light of those already extent through the pioneering of the NMRA and BRMSB and in our own country, AMRA, are likely to have an influence on modelling far beyond the Continent. As both documents should be of full interest to members and we have permission to do so, we intend to publish them as fully as possible, therefore the History appears in this Journal, and the Standards, after translation by member Herbert Tisher, will appear in a following Issue.

OVERHEAD WIRING AND OPERATION
Part 11 - Wiring the Overhead
by Geoff Lorimer.

OUT OF SCALE NECESSITIES.

1. The size of the wire used for the contact wire must be somewhat oversize since the prototype is 0.25sq.ins. in cross sectional area. This would give approximately .0001sq.ins. which means a diameter of .0114 ins. or about 31swg in '0' gauge, in 'HO' the scale size would be such as to be almost impossible to handle let alone carry the current adequately. In '0' gauge the suggested size is 21swg copper wire as found in 7x21g. stranded bare copper wire as used for earthing in house wiring. Ofcourse, a finer gauge phosphor bronze wire could be used, but it is far more expensive. The methods used for stringing the wires as described in these notes are based on experience with the former.

2. As we now have to support and tighten this slightly overscale wire so that it will not give too much to the upward pressure of a pantograph, we will have to use overscale tensions and thus our rigging and posts (structures) will have to be relatively more robust. It must be emphasised that, particularly at points where the wires slide on and off the pan, the absence of upward 'give' is of vital importance to smooth running and trouble-free operation. Obviously, if the wire on which the pantograph is running, moves up under the pressure of the pan, the pantograph will rise and its "horns" will foul an adjacent wire when it "comes in". See Figure 1.

3. The tension required for 21g. copper wire is up to 6lbs. This may be produced in two ways as in the prototype, i.e., by springs or weights. For modelling, springs are far more satisfactory as less rigging is required at tension points. Springs have always been used in full size practice for short

wires such as are used in yards. Also, in the electrification of the Gippsland line, the VR have used springs throughout. The springs are used in compression, and the arrangement is shown in Fig. 2.

The "shackles" are made from 17-18g. steel or phos. br. wire. This material will retain its shape when under tension and should be used for all parts of the rigging where this property is required. The shape of the shackles is shown in Fig. 3. The springs are general purpose purchased from McEwan's some years ago and still available. They are 1-3/4" long and 1/4" diameter. The spring assembly should be attached to the mast by some physical method - do not rely on soldered joints, but by all means use it to hold otherwise physically anchored joints in place. A recommended method is to use a shackle which has been bent over itself. This is slipped onto the loop end of the one remote from the wire in the spring assembly and opened to fit around the mast. It will close tight around the latter and is easy to remove during maintenance. See Figure 4.

4. "Pull-off" arms are also made of similar material and will be required in many shapes and sizes, but in general they must all have a pan clearance so that, if the pan follows a sideways roll of the vehicle, it will not catch on the arm. Fig.5,5a. Extra contact between the arm and the wire can be obtained by bending the arm at the end as shown in Fig. 5b, giving a stronger soldered joint. Fig.5c illustrates two types of "bridges" for use where wires come close together and have to hold each other.

5. PRINCIPLES OF WIRING.

It is advisable to divide the flat part of the pan into 4 sections. See Fig.5d. Attempt to keep the contact wire between D and E to allow a margin for any rolling of the vehicle. C is the centre. A and B are the extreme ends of the flat section. D and E are the mid-points of AC and CB respectively.

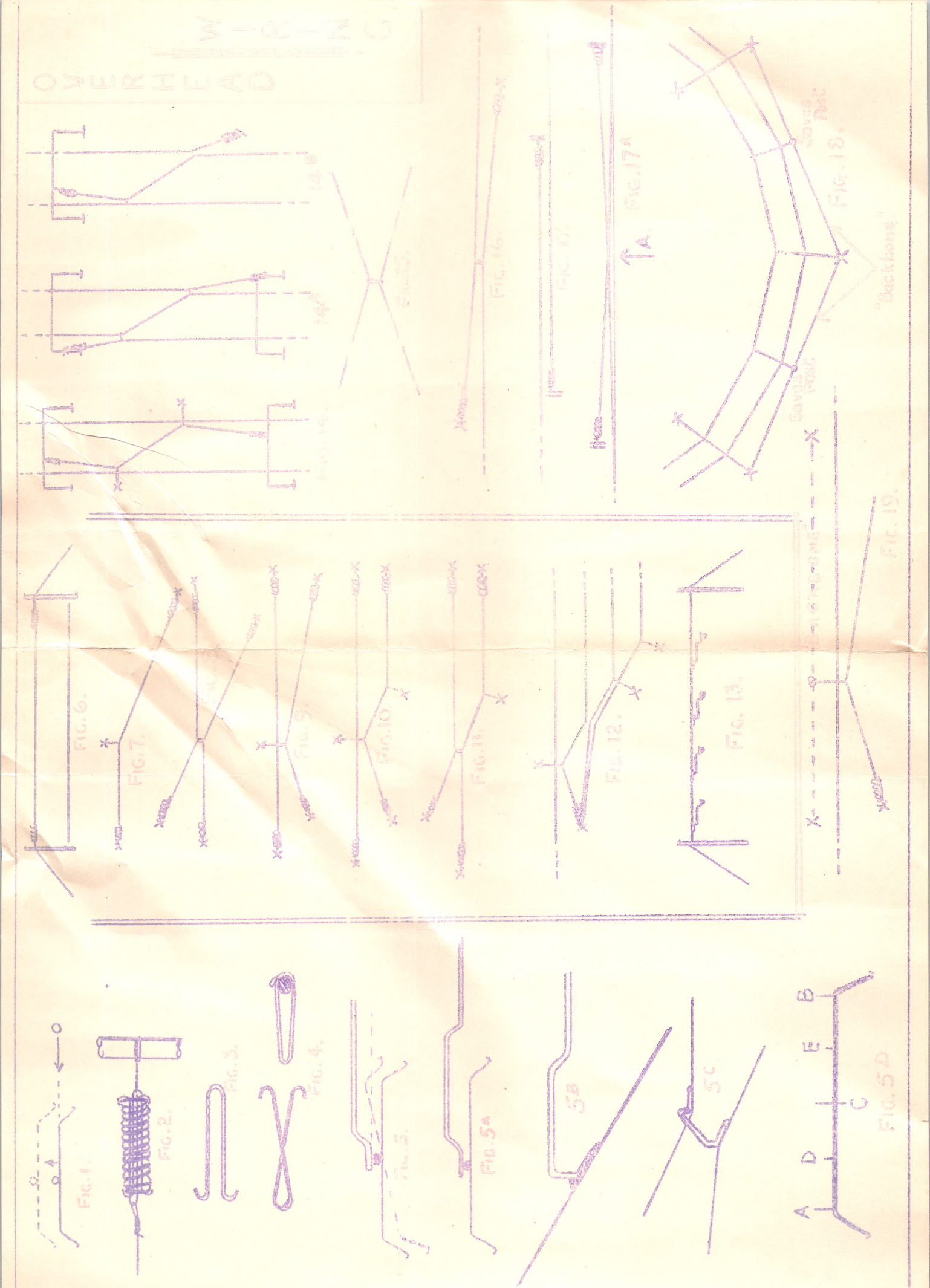
FIG. 1.
FIG. 2.
FIG. 3.
FIG. 4.
FIG. 5.
FIG. 5A
FIG. 5B
FIG. 5C
FIG. 5D
FIG. 6.
FIG. 7.
FIG. 8.
FIG. 9.
FIG. 10.
FIG. 11.
FIG. 12.
FIG. 13.
FIG. 14.
FIG. 15.
FIG. 16.
FIG. 17.
FIG. 17A
FIG. 18.
FIG. 19.
"Backbone"

A vehicle fitted with a pantograph should be used to position the wires. Assuming a straight length of track, we have the simple arrangement shown in elevation in Fig.6. In the plan, Fig.7 a curve has been added to illustrate the use of the pull-off arm. One post may be sufficient to keep the wire within bounds at the curve.

In Fig.8 the curve has become the diverging road at a turnout and another wire has to be originated to cover the straight track. Notice that the post used in Fig.7 has been moved so that it is in line with the curve wire in order that the tensions of the two wires will balance each other over the turnout thus saving a post. The extra post would be necessary in the arrangement shown in Fig.9.

A parallel siding, Fig.10, would require still another extra post. If the siding were short but the mainline continued on for quite some distance, it would be wise to terminate the original mainline wire in the siding letting the new one run in as the mainline wire. As in Fig.8 we save a post as the wires will balance their tensions. See Fig.11.

It is advisable to keep wires short rather than too long, although wires less than 6' are as difficult to maintain as wires over 15'. Long wires have too much movement in temperature variations, whereas short ones will tend to pull away in cold weather.

Fig.12 shows the entrance to a ladder track. If tensions cannot be adjusted over the 2nd. and 3rd. turnouts, extra posts A and B will be required. Across yard tracks, wires may be held in place by a wire and pull-off arms and using only 2 posts. See Figures 13 and 13a.

Crossovers can be dealt with in several ways depending on the proximity of and type of masts available for terminating wires. Three arrangements are

shown in Figs. 14, 14a and 14b. In Figs.14 and 14b we require the use of structures which span the double track. Extra single posts may be needed.

Diamond crossings are simply dealt with as shown in Fig.15. Where single or double slip-points are incorporated in the diamond, the wires are kept as far apart as possible, i.e., the D to E distance in Fig. 5d. The pan may still collect (contact) the wire within the D or E limit when passing through the slip. Where wires meet as above, they must be kept at the same levelso that the pan will be in contact with both when passing from one wire to the other. This principle applies to "bringing in" new wires. A new wire may originate at a post some distance from the point where it contacts the pan of the pantograph, in such a case the point of origin may be above the general wire level provided that no wire comes within the range of the pan unless it is at the same height as the general wire level.

6. CHANGEOVER POINTS.

This is where a new wire is brought in to take over from a wire which would otherwise become too long, e.g., on a long stretch where there are no points which would necessitate a new wire. On a single line with posts on each side this may be done as shown in Fig.16.

Where structures span the track or tracks, the wires may terminate, or originate, at a point on the structure above the general wire level, but still parallel with the line of the wire. See Fig.17 and 17a. As shown in Fig.17a the spring assemblies must be out of the upward range of the pantograph, but the distance between the 2 structures must be sufficient to enable the changeover at point A to be made without any noticeable upward "kink".

7. CURVES.

On any but large radius curves, it is necessary

to provide many pull-off points to keep the wire within the D to E limits of the pan. This would tend to indicate a maze of posts, but many of these can be eliminated by using, as in the prototype, a "backbone". This is a wire stretched between 2 or more posts to which intermediate pull-off arms are attached. This is illustrated in Fig.18. Notice also that on the double-track layout shown the centre post does not, like the others, span the tracks, but its arm reaches out beyond the first track so that the pull-off arm from the inner track is attached to the end of this arm. Backbones can also be used to save posts if adjacent posts are suitably positioned to support the backbone. Compare Fig.19 with Figures 9 and 12.

Finally, observation of fullsize methods of dealing with different track layouts will give the modeller a host of ideas. Also study the type of posts - from the wooden ones placed like the steel masts of a street tramway to the gigantic steel structures spanning many tracks, and perhaps acting as a signal gantry as well. You may not wish to model the structures in detail but the function of the different types of posts and structures is definately related to the track layout beneath them and is worthy of close study.

In the next Journal we will deal with the making and installation of structures and posts, the provision and installation of insulating blocks on the contact wire for sectioning, and the addition of the ornamental catenary. So between now and then plan out your overhead on paper, and roam the prototype in search of ideas.

MEET YOUR AUTHORS

This Issue we have two new Contributors to our growing list of writers, and they are most welcome. Their subjects happen to be quite varied, too - one a constructional, or rather, make-it-yourself article and the other a prototype travel report, which all makes for good balance.

From a report in a local paper, verbatim, meet Graham:

GRAHAM WATSFORD, of Karma Avenue, East Malvern has just received his sixth major award since matriculating early this year. Already Graham, who is 17, has been awarded a Commonwealth Scholarship, General Exhibition, Senior Scholarship, engineering Cadetship, the Waxman Prize, and now has won the prize of the Victoria League for Highest in the State.

A Melbourne High School old boy, Graham is now doing first year Engineering at the University of Melbourne.

He is an ardent 'model railroader', and Secretary of the Victorian Branch of the Australian Model Railway Society.

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HOWARD GROOME, from Bognor Regis in Sussex, UK., a young man in his teens, has only been in Australia for 12 months. He is doing his Inter., and intends to become an Architect. He commenced railroading with Farish but has now expanded to O gauge. His plans and timetables are ready for the Day his layout is an established fact. He would like to see more of an Australian national character in our modelling out here instead of the ' "usual Anglo-American mess" ' we do go in for. Howard belonged to the Bognor Regis Club which owned the biggest automatic-controlled '00' (English) layout in the world. In prototype and modelling he is all for vintage locos - Diesels are right out! -(Thanks very much indeed, you two chaps. Ed)

YOU NEED THIS GREASE GUN
says Graham Watsford.

Don't be frightened off by visions of pistons shrouded in packing, or precision machined nozzles. This job falls squarely into the Kitchen-table variety, the bare pre-requisites being a file - even a nail-file, and the raw materials; in my case a Platignum ball-point pen refill.

The 3 main parts for a simple gun, suitable for greasing worms, some journal-boxes and motor end-bearings, are nozzle, barrel and plunger. Considering them in turn, the writing end of the refill will come in as the nozzle. Before doing any work, however, soak the works in metho. for about 15 minutes to remove the ink from inside. Doubtless you'll become coated with the stuff, as I did, but it wears off in time!

Now that nozzle; chuck it in lathe, handbrace or universal clamp (fingers to you), and maintaining original contours file off the material until the ball drops out. Variations in the diameter of the hole can now be made, up to a point, by progressive removal of more material from the tip. When satisfied, unchuck it and lay it aside.

The Barrel is, ofcourse, the barrel of the refill just made to order.

Then there's the plunger and this is why I specified a Platignum refill. As well as having a large capacity it is also fitted with a small 'jigger', apparently designed to scrape the ink off the sides of the tube, and if it can do that, it certainly can do the same with graphite grease.

For the operating rod, take a 4" piece of wire about 1/16" in dia., and a close fit into the hole in the plunger, and place a blob of glue or solder

half an inch from one end. Slip on the other end, the small plastic bushing from the tube, then solder on the end the head of a solid drawing-pin (minus the pin!) and concave side upwards. If assembled as shown the plunger cannot be retracted, but this prevents air being drawn into the works and spoiling operation by its cushioning effect.

All that remains is to fill it! so-

Clean out the tube and insert one end into the grease. Now - SUCK -- H A R D!! If you receive a mouthful - then you're lucky, brother, for you must have a more fluid sample than mine. Under maximum vacuum the grease will probably rise halfway and refuse to budge further. No need to lift a pop valve trying to raise it another 1/8" though - there'll be enough there to last for 6 months at least. Now remove the tube and wipe off surplus grease, put all the bits together as shown, and press the plunger.

A thin stream of grease coming out of the proper end means that you've gained a serviceable, but not very elegant, grease gun.

> Jolly good, Graham - thanks a lot!
> (Graham added a post script to this article letting me know that he had not forgotten my request for an article on his SOUTH PACIFIC LINES, and adding, '"--as you know, tearing-up is in progress, so the foregoing was written to tide over until then. It's much easier to write about what has been done than what will be done; the latter reads too much like armchairing - I hope to be able to indicate the relative success and merits of present and projected methods of trackbed construction, as well."' - Ed.)

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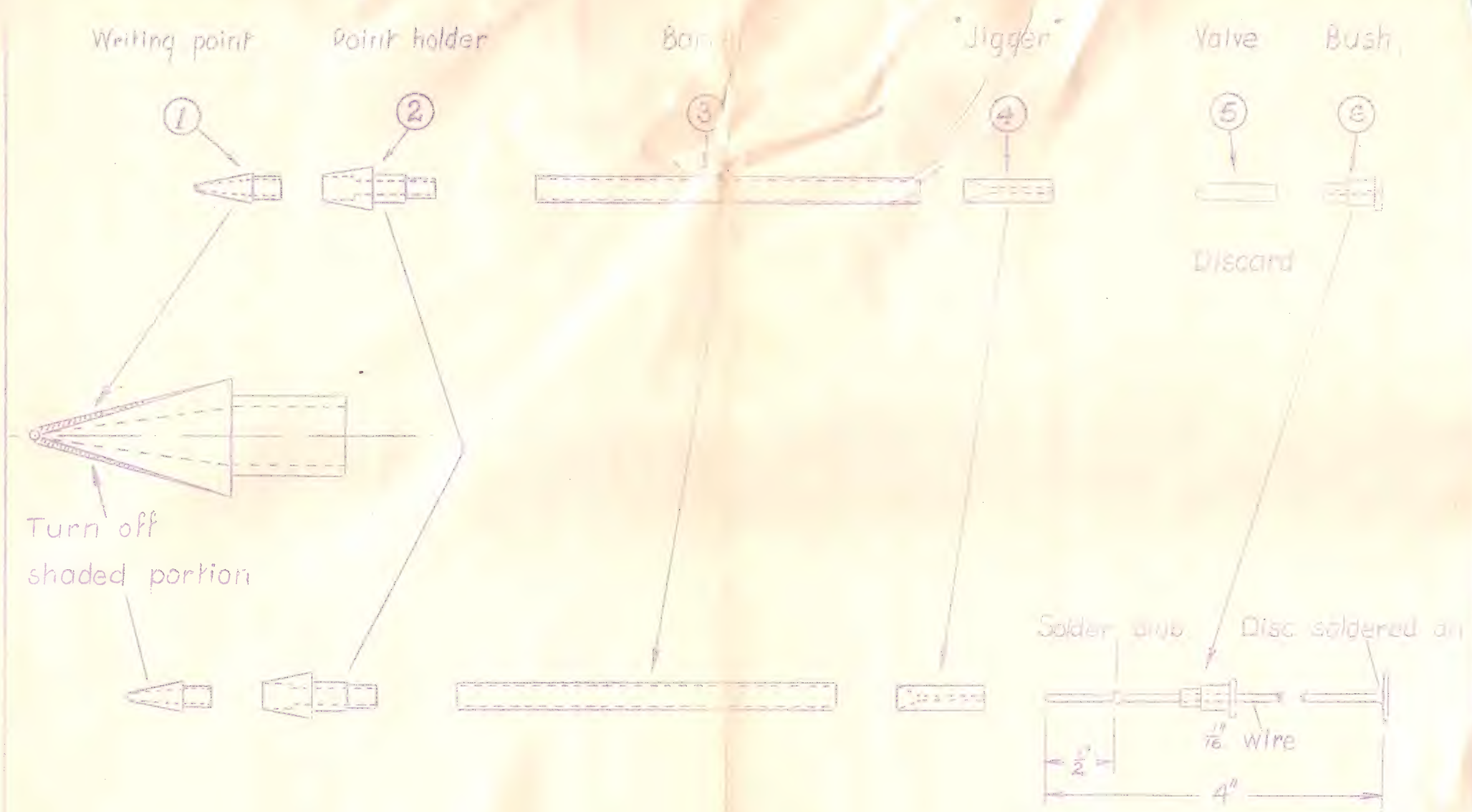

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GREASE GUN		
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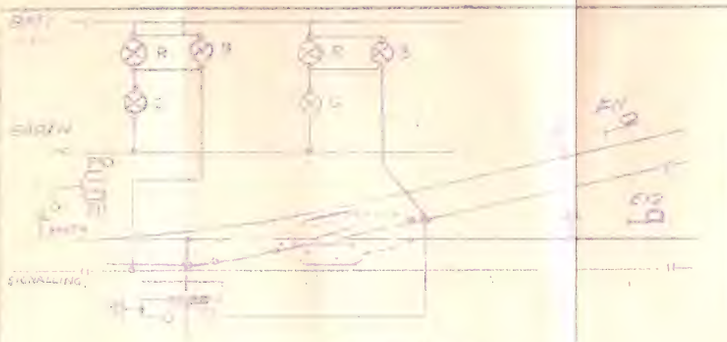


FIG. 5. (LAST ISSUE).

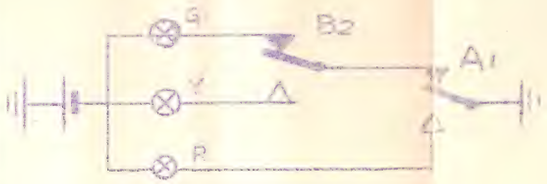


FIG. 1.

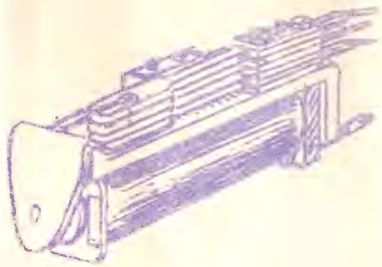


FIG. 2.

FIG. 3.

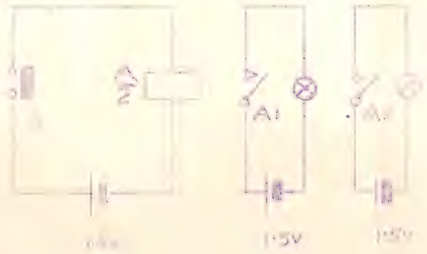


FIG 4

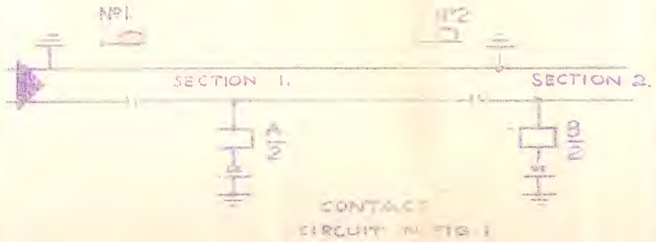


FIG. 5.

FIG. 8.

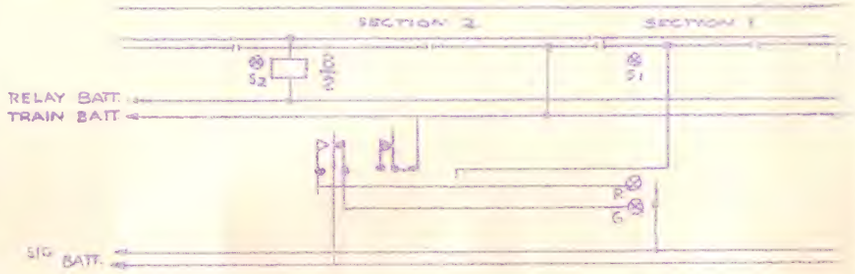


FIG. 9.

FIG 6

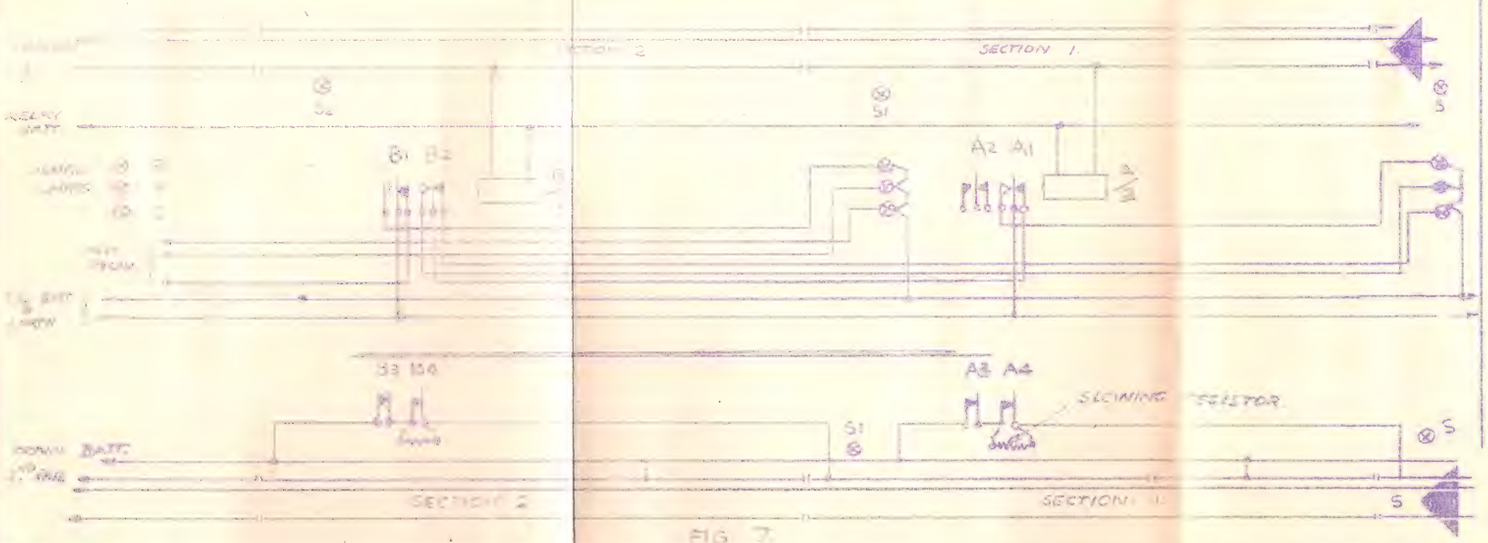
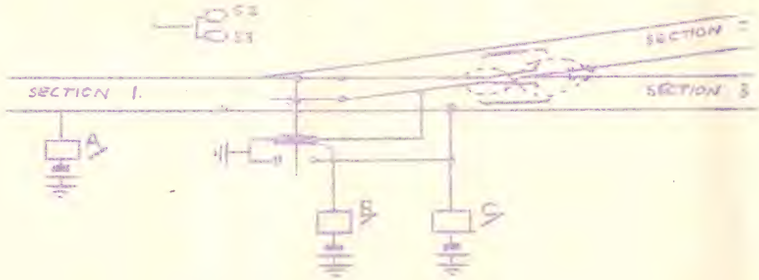


FIG 7.



NOTICE SIMILARITY TO FIG. 5 (LAST ISSUE). CONTACTS & SIGNALS WIRED AS BEFORE (FIG.

SIGNALLING CCTS
3 ASPECT - 6'-LITE
DRAWN BY N.LEVIN 12-1- FOR USE BY A.M.R.A.

SIGNALLING AND SIGNAL CIRCUITS
- THREE ASPECT
by N. Levin.

(continued from page 8, August issue)

Please note that Fig.5 from the last issue has been re-drawn as some copies were not too clear where colours were used.

- - -

Fig. 1 shows the basic 3-aspect circuit for color-lite signals. Notice we now have to use 2 sets of contacts for switching the Red-Yellow-Green lamps. If manual control is used, these contacts may be found on any telephone key bought ex Disposals Now don't dash out and buy one until you finish the article, for by the time we've finished there will be contacts all over the place!

If automatic control (which really is the easiest) is used, then the contacts will be mounted on a relay. "Now, what is a relay", many people ask me when they hear me raving, well - A RELAY IS A DEVICE WHICH CAUSES A CHANGE IN ONE CIRCUIT TO BE TRANSFERRED INTO OTHER CIRCUITS.

These may consist of electronic, mechanical, electro-mechanical, etc., devices. In our case they will be of the electro-mechanical variety, of which there are many types.

Fig.2 shows a sketch of one type of relay (3000 type, B.P.O. pattern.)
Fig.3 shows a diagrammatic sketch.

Briefly, the relay's operation is this. When a voltage is applied across the tags of the coil, current flows in the relay winding. This causes an electro-magnetic field (or flux) to circulate in the core, yoke, armature, across the air-gap and back to the core. Since the armature will be opposite polarity to the core face, the armature will be attracted to it. The armature extension shoots up, and

operates the contacts on the yoke. Therefore, if we have a relay wired up in the simple circuit as in Fig. 4, when we close the switch at S, relay A2, (relay A - 2 contacts) operates and changes over the contacts at A1 and A2. Thus the change in one circuit is transferred to the other 2 circuits.

If we connect the relay in the circuit in Fig.5 and the contacts labelled 'A' are on relay 'A', contacts 'B' are on relay 'B', etc. Thus, if a train enters Section 1, the wheels close the circuit to ground and relay A operates and changes over contacts A1, which places Earth on Red globe and disconnects the Green. When the train moves to Section 2, it grounds the relay B. This, on operating, changes signal No.2 to Red at B1, and at signal No.1 to amber at B2, and so on.

Thus we have built up the signal circuit for auto-three aspect signals, the complete wiring circuit for which is seen in Fig.6.

To make things a little more difficult to wire, and for those enthusiasts who wish to make the circuits self train-controlling, another 2 contact sets are required on each relay, and are wired as in Fig.7 Contact B3 stops the train approaching signal No.1 when there is a train on Section No.2, contact B4 slows the train in Section No.1 when there is a train in Section No.3.

And so you can see, using relays there is no end to the odds and ends you can rig up on your railroad using the track circuits to operate relays, and relays to do the switching.

For those chaps who are using 2-aspect signalling, the same conditions apply when using relays, as in Fig.8, which shows the wiring for 2-aspect with automatic guard circuits. Fig.9 shows circuits for use with relays at turnouts.

This article has been made fairly concise, and, as before, if you get into any strife, let me know direct or through the Editor, and we will clear it up through these pages.

Next issue we'll nut out the circuit for cross-overs, etc., and if someone would like their SMALL layout circuits drawn up, send a copy of the layout as above, with the dope required - 2-aspect, three-aspect, guard circuit, etc.

NOW you can see why I held you back when you were going to get a switch with only one spring set on it! Cheers -

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TO 'THE ALICE' BY TRAIN
with Howard Groome.

Melbourne - Spencer St. at night - in Platform One stand the gleaming Overland coaches. The party takes over a Second class coach immaculate in Laminex and aluminium interior fittings. A slight jerk as the twin diesels B62 and 63 arrive, and then on the dot of 8 we smoothly accelerate out into the dim, spooky station yards. Even in adjustable seats, sleep was impossible before Serviceton. But, on what seemed to be better laid track on the SAR, we soon dozed off. When we awoke the countryside was easily rolling past and soon we were tackling the strenuous climb through the Lofties. After passing the summit we rolled down through the suburbs into the well-planned Adelaide Station.

That evening we enjoyed an excellent view of the Station from our Hotel roof. It was fascinating to watch the intricate train movements all carried out with a smoothness, precision and speed which was an eye-opener even to me, used to English operation.

On Wednesday morning, at 7.50 we left on the train to Port Pirie, a distance of 134 miles, behind streamlined 'Pennsylvania type' 4-6-4, No. 523, 'Essington Lewis'. The train consisted of 2 verandah-ended carriages which gave a very thrilling ride, a number of modern coaches, then freight cars, one of the extra-ordinary SAR Brakevans, and following up, a Petrol-electric unit trailer. All along the line we met these units of the 'Bulli' type.

At 12.27 we pulled into Port Pirie Junction with its 3-gauge complex. Here we saw one of the C.R. Budd diesel railcars, and a number of the new C.R. Clyde diesels on standard gauge. On 3'6 we saw fantastic locos of typical Australian design and with typical English whistles. In the town we found 'Essington Lewis' and our train parked in the main road.

Down in B.H.A.S's works were 2 English outline 0-6-0 tanks named Peronne and Poperies - they were clean, and looked very smart. To have made this journey complete we should have gone to Port Augusta by one of the Budds, but as we wanted to go on to Whyalla a bus was used. However, these Diesel-hydraulic-air-conditioned and speedy units are revolutionising travel on this line, and are the pride of both the C.R. and the residents of all towns along the line.

At Whyalla we discovered a perfect little 3'6" railway owned by B.H.P. with a total of 11 locos. Most are of Baldwin origin being 4-6-0's, 2-8-0's, 2-6-0's and 2-8-2's, also a quaint little 0-6-0ST yard shunter, and a very old loco, built by the Light Railway Company of London, it was an 0-4-0T with a valve gear of unknown type or quality, also it had the high pressure of 200lb/sq.in.. Each has a black livery with a large white numeral.

On Thursday we drew up outside the very pleasant

and spacious station at Port Augusta, to board the 'Ghan'. The old semi-elliptic-roofed carriages with the small windows were in the platform, and we installed ourselves in a 4-berth compartment with fan and built-in wash basin. These cars have a dark interior accentuated by the wooden panelling. By this time the loco was attached, and an inspection revealed an interesting fact. On the cabside was the Works plate bearing the legend: Thomson's, Castlemaine, Victoria. Yes, this 26years old loco has been serving the outback for the same number ofyears.

Back in the carriage, a toot from the whistle, and out we pulled. Soon we were climbing out through the Flinders Range with hard blasts from our 4-8-0. At dusk we rolled into Quorn, the first long stop so far; here the dining car which was too heavy to come through the Ranges, was attached. Our N.M. No.34 was changed for one 2 years older, No.19. Also, 4 more cars, mainly freight, were added to the train.

Travel is rather reminiscent of the narrow gauge line in the hills near Melbourne. The line is very busy, considering its length. (Which would be its main point of differentiation from the Melbourne hills line!! - Ed.) A great portion of the traffic is cattle and sheep going South. Alice Springs receives the majority of its supplies by rail, and as there are over 20 main stations, traffic is fairly consistent. The main line is single throughout, with a good number of passing loops. At practically every station is a wye and goods shed.

Most of the signals are lower quadrant. Travel is at a 'cond' speed, not too slow to be boring and not too fast to miss the scenery. Once I timed 40, which was about the fastest it ever went. As we went along extra trucks appeared, and this is the train that arrived at The Alice.

Loco: NM class 4-8-0 No. 19,
Loco water tank,
Goods: 1 - Flatcar - for road vehicles,
1 - Gondola,
3 - Refrigerator cars,
1 - Bogie boxcar,
Pass: 7 - Sleeping cars,
1 - Dining car,
2 - Non-sleepers,
1 - Bogie Brake.

The Brake vans are marvellous vehicles with side-windows like English types. During the journey they are the travelling home for the two engine crews, guard and dining car attendants.

We pulled into the station at Alice an hour late after a journey of 51 hours covering 763 miles. For 42 hours we had been hauled by the same loco going continuously, with stops only for coal and water, the longest being only about an hour.

Yes, this line has a real character which it will be hard to find when the diesels take over, as they are due to, in September. -(Howard's trip was made about 3 months before this Issue was due for publication, many thanks, Howard, for this armchair trip on perhaps our most 'famous' out-back line, or train, 'The Ghan'. Perhaps some-one can supply an account of the other end of this interrupted route, from Darwin to Birdum?
- Ed.)

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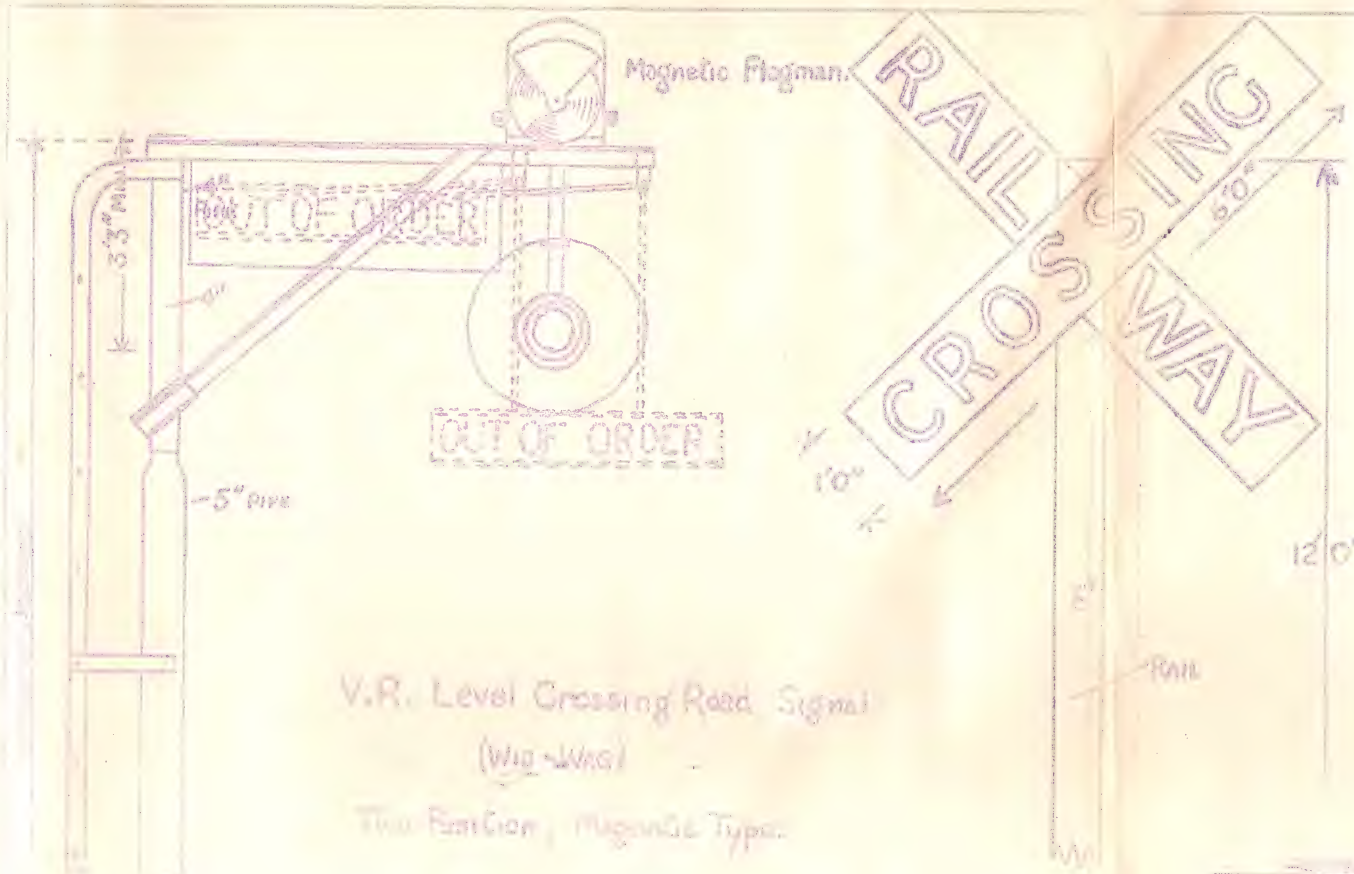
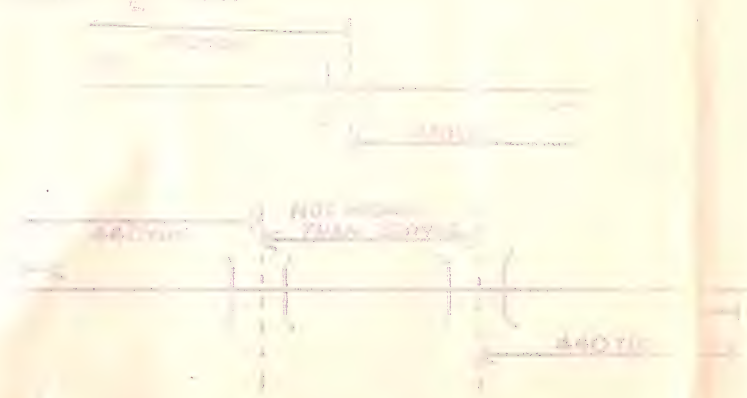
The Association having purchased a duplicator most reasonably through the efforts of Asst.Sec. Dave Gross, we shall in future run the type script of this journal in this black and white medium, reserving the Fordigraph, through the good offices of Ern Mainka, for reproduction of line drawings.



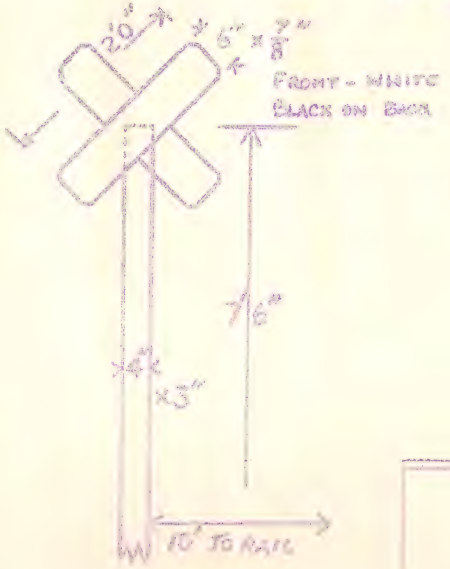
V.R. Level Crossing Road Signal

(Wig-Wag)

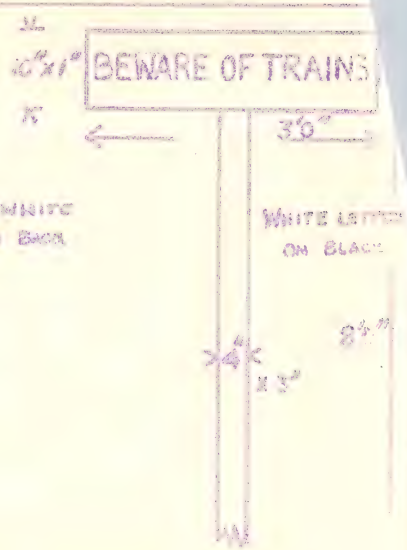
Two Position, Magnetic Type.



Placing Whistle Board — V.R. (Not to scale)



Whistle Board.



V.R.
LEVEL
CROSSING
SIGNS

From drawing in Hudson's Bay Railway Testimony Notices.

BOOKS FOR THE BEGINNER
as suggested by Ern Mainka.

From time to time we get technical queries from beginners. We are pleased to help the modeller out of his difficulties, in fact it is part of this Associations' job, but sometimes we get queries which would take hours and pages upon pages to answer. Therefore, in the case of a big subject it pays the modeller to buy a text book which he then has for future reference. The text books in the following list are obtainable from McGill's Agency, Elizabeth Street, Melbourne, the Technical Book Co., Swanston Street, Melbourne, and most hobby shops. It is by no means a complete list, as there are new books constantly coming out, so there's an invitation for someone else to continue the good work.

A point to consider is what type of layout you are modelling, American, English, Australian or Freelance. Naturally the basic principles are the same no matter what you are building.

Starting with American books:

"The Model Railroader Cyclopedia". Contains plans of locos, rolling stock and lineside structures of real railways for the modeller to use as prototypes. This book would mainly interest American followers.

"Model Railways" by Popular Science. Introduction to the hobby; Use of tools; Converting tinplate to scale operation.

"Model Railroad Engineering" by David Marshall. Layouts; Trackwork; Bridges; Signal Engineering; Constructing Timetables. Full of sound information.

"How to build a Model Railroad" by H.V.Loose.

This book is smaller than its title suggests. Poorly bound for workshop use. Details very sketchy. Not recommended.

"Handbook for Model Railroaders" by W.K.Walthers

A general introduction to all phases of the hobby, particularly for the beginner who buys all his equipment ready made. The main snag is that in this country you can't buy any of the goods mentioned! It has some very good photos of scenic work.

And now for the English books.

"The model Railway Encyclopaedia" by Carter.

About 450 pages treating every branch rather fully, also numerous charts, tables, wire sizes, etc. Thoroughly recommended.

"Model Railway Power Signalling" by Carter.

Besides electrically operated signals, this book deals with track circuits, relays and electronic devices. Anyone radio minded should lap this up.

"The Model Railway Handbook" by Bassett-Lowke.

A general survey of model railways from Trix to 10½" live steam. Not particularly informative for those who build their own. Seems to be more of a trade build-up for Bassett-Lowke products.

"Garden Railways" by Tustin. This book is a must for those going outdoors. From 'O' gauge to live steam. Sites; Snags; Scales; Levels; Concrete work; Stations; Trackwork; Motive Power; Rolling stock, etc., all pertaining to outdoor use. Also stud contact pick-up.

"Railway Modelling in Miniature" by Beal.

Particular reference to 16.5mm gauge and buildings. A good deal is devoted to the author's layout. Rather tedious.

"New Developments in Railway Modelling" by Beal. An improvement on the previously mentioned book. Covers mainly trackwork and scenics with particular reference to 16.5mm gauge. An interesting chapter on BRMSB Standards.

"Miniature Locomotive Construction" by Aherne. You must have this book. With this book and a bit of gumption, any one can build a loco on the kitchen table. It is very interesting reading even though you don't build the loco.

"The Model Railway Hobby" by Binstead. Useful information regarding pre-grouping English rolling stock. Hints on designing track layout, sidings, terminals, various formulae, tools, photography of models. Most suitable for English prototypers.

"A Book of Model Railways" by Wickham. This book should be useful to the modeller no matter to what prototype he is building. Divided into eight sections: (1) Introduction; History of Modelling; Standards; Tools; (2) Layouts; Planning. (3) Trackwork; Civil Engineering. (4) Constructing locos; Freelancing; Electric type locos; Overhead wiring. (5) Control and Construction of Signals. (6) Constructing rolling stock. (7) Buildings. (8) Scenics.

Now we come to the cheaper books which sell for about 7/-, all by Ernest Carter.

"Electric Model Railways". Recommended for those who are hazy about electricity. Deals mostly with power supply, wiring-up, 2-rail, outside 3rd rail, stud contact, motors, circuits and the like.

"Working Model Railways". Introduction to the hobby. Briefly covers trackwork, 'OO' pointwork and placing of signals.

"Stud Contact Electrification". How to install and wire up the studs. How to use the studs for operating other circuits. Just a hint here. The pick-up shoe as described is all wrong. The correct type of shoe to use is depicted in the lower illustration on page 94 of "Garden Railways".

"Make Your Own 'O' Gauge Motor". After reading this book you will agree with me that an electric motor is no longer a mysterious piece of apparatus. The stampings and magnets are obtainable in every Capital City, so go to it.

"Building Passenger Rolling Stock". Excellent for those who are handy with cardboard and wood; a good chapter on painting and lettering.

"Model Railway Signals". Detailed construction of semaphore signals. Placing and operation of signals. Elementary uses of signals in full size.

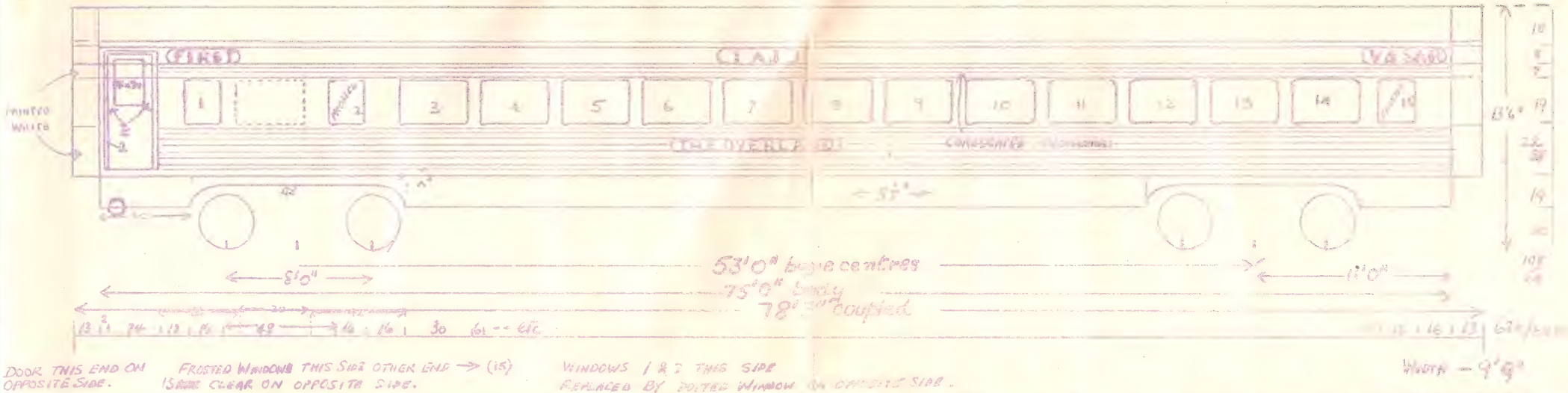
There are probably many more books I haven't heard of, so I'll leave it to someone else to complete the list.

Coming to monthly journals, you probably know of them, but for the sake of completeness I list them as follows:

American: "The Model Railroader"
"The Model Railroad Craftsman"
English: "The Model Railway News"
"The Model Railway Constructor"

For the benefit of the armchairist (I shouldn't encourage this sort of thing!) there are numerous publications dealing with fullsize railways only. These include: (English) "The Railway Magazine" and (American) "Trains" and "Railway Age". There are also several Continental publications covering European practice.

V & S.A.R. Joint Stock "A.J." CAR 1ST CLASS 48 Seats ~17 TONS.



N.S.W.G.R. "OBS" CAR — IN THE DRAWING PUBLISHED IN THE AUGUST "JOURNAL" IT SHOULD HAVE BEEN MENTIONED THAT THE WINDOWS ON THE OTHER SIDE OF THE CAR ARE THE SAME WITH ONE EXCEPTION — THE LARGE SPACE BETWEEN THE 16TH & 17TH WINDOWS IS OCCUPIED ON THE OTHER SIDE BY A WINDOW. THE SPACE IS 29/64THS AND IS ALTERED AS FOLLOWS:—

N.S.W.G.R. "SFS" CAR — 2ND CLASS INTERCOLONIAL & TERMINAL CAR — 27 Seats

THE EXTERNAL APPEARANCE & DIMENSIONS OF THIS CAR ARE SO SIMILAR TO THE 'OBS', IT SEEMS UNNECESSARY TO DRAW IT AGAIN. THE ONLY VARIATION IS BETWEEN THE RIGHT SIDE OF THE 12TH WINDOW AND THE LEFT SIDE OF THE 17TH WINDOW OF THE 'OBS'.

THE ARRANGEMENT OF THE 'SFS' IS THUS

THE ABOVE APPLIES TO THE OPPOSITE SIDE ALSO — END ELEVATION SAME AS FOR 'OBS'

V.R. "BW" CAR 2ND CLASS 60 Seats. AGAIN, THE EXTERNAL APPEARANCE & DIMENSIONS ARE SIMILAR TO THE "AW" CAR DRAWN PREVIOUSLY. THE SPACE BETWEEN THE DOORS IS FITTED WITH 7 PAIRS OF WINDOWS THE SPACE IS 346/64THS" (5⅜ - 1/64TH") AND IS MADE UP THUS:-

Note. There are other 'BW' cars with 64' bodies and also 'ABW's' of both 58' & 64' These will be given later.

Coming to Australia we have "Railways in Australia", which we hope will be in regular production again soon, and "Railway Transportation". I can recommend the latter for those who are building to Australian prototypes because it has numerous excellent photographs from all States, and often leading dimensions and other valuable data is given.

Going off the track a bit in concluding this Article there are active Clubs in every Capital City which publish a monthly journal of some sort containing useful hints, etc. By joining a club you can meet chaps and exchange ideas. If you are particularly interested in Victorian prototypes in ¼" scale or 16.5mm. gauge I would recommend you join the Victorian Model Railway Society, which publishes "The Coupling" monthly.

For the armchairist, the Australian Railway Historical Society which publishes the excellent monthly "Bulletin". Then there is the Australian Electric Traction Association which publishes monthly "Electric Traction."

Finally, if you can write of something you've done, or are doing, for our own "Journal" send it in to the Editor right now. - (Thanks, Ern. Ed).

- o -

VALE A MODEL MAN.

London, Oct. 23.

W.J.Bassett-Lowke, the great model-maker, died today. His fine models have been known and admired the whole world over, for half a century, and have delighted tens of thousands from lucky small boys, to Kings and millionaires.

His large-scale ship models, the acme of perfection, are to be seen today in the offices of Shipping lines in Cities all over the world. His work stays on.

RE-ORGANIZATION OF MODELRAILROADING IN EUROPE. by Franz Moeller. (West-Berlin)

For better understanding of International co-operation in model-railroading it is necessary to point out briefly the historical development of model railroad gauges, scales, track and superstructures. The basis for this consideration is connected closely with the first railroad between Stockton and Darlington in England where George Stephenson was engaged to build this line. Edward Pease, another great and almost equally obstinate man, ordered him to make the width of his track to that of local country carts; with characteristic thoroughness Stephenson had measurements taken of about 100 carts used by farmers in the neighbourhood. The average width of these carts measured between the wheels at their base was 4' 8½". With the exception of a few countries only (Spain, Portugal), this width of 4' 8½" = (1435mm) later became the European Standard Gauge, though not a 'rounded', and therefore, not a very convenient figure. This gauge, however, already used in Europe on such a large scale could not be changed without upsetting our whole railway system.

Regarding our model trains; at the beginning of our present century, so-called "toy-trains" were in full bloom, and there were only a few people starting construction of real scale models. At that time, 50 years ago, there were several toy railroad gauges in use, all of them big, and they were called: 1", 2", 3" and 4". As such toy trains were very expensive only wealthy folk could afford them, and they needed plenty of room too! The No. 3 and No.4 gauges being the largest were so far out of our model railroad world that a few stories only about them have been passed on to our present time. The smallest of them, gauge No.1, is still known in our present time, used by a very few people only. At that historical time a proper model scale, according to old catalogues,

was not recognisable at all, if not, the gauge itself gives an idea, i.e.,

gauge proportion = $\frac{\text{toy train gauge}}{\text{European Standard Gauge}}$

with the following result:

Gauge No.	Gauge inches	Gauge mm.	Gauge proportion
4	$2\frac{3}{4}$	69.8	1/20.5
3	$2\frac{1}{2}$	63.3	1/22.7
2	2	50.8	1/28.7
1	$1\frac{3}{4}$	44.5	1/32.2

Model scales were unknown and meaningless as no toy trains were built according to any prototype, but were absolute fantasy. All this was happening in England, whilst the Germans were manufacturing for the British trade. Very soon, based upon gauge No.1, the so-called and well known "Battle of the Gauges" was started by an important step taken by a set of pioneers who had already succeeded in splitting the model train atom, producing a smaller gauge of $1\frac{1}{4}$" (= 31.8mm resp. 32mm) only. The smaller gauge had to have a name, as there was no number below No.1, this gauge was simply called "0".

Gauge No.	Gauge inches	Gauge mm.	Gauge proportion
0	$1\frac{1}{4}$	32.	1/45

The introduction of a smaller gauge was a big success for less space was required in the home in comparison with the older gauges. But give some people your little finger and they will soon take your whole hand, and so it proved concerning our model gauges. Another group of pioneers - or radicals - around the time of World War I boldly started to cut ZERO in HALF, with the name of their new gauge "00" in sensible further development.

Gauge No.	Gauge inches	Gauge mm.	Gauge proportion
00	$\frac{5}{8}$	15.9 or 16	1/90

Again German toy manufacturers co-operated, and soon after the year 1920 the new gauge was the best joke of that year amongst British modelrailroad enthusiasts. This gauge is still alive though represented only by the firm of TRIX, and likely to be abandoned if a change to 16.5 takes place.

In further development new names like A. Stewart-Reidpath and Edward Beal were appearing, often in the upcoming model railroad literature. Up to this point no one had taken any care of scales or proportions in our models. But precisionists got to work and they found that the gauge proportion:

16mm/1435mm = 1/90 = 3.38mm/1 foot

according to British opinion, was a very inconvenient calculation. Another gauge proportion in British style is: 3.5mm/1 foot = 1/87, and this was found much more convenient, so that this gauge "00" was redefined as 16.5mm as a result of such a consideration according to the new gauge proportion 1/87 explained above, last but not least as refinements of detail came in. This new gauge was introduced therefore as follows:

Gauge No.	Gauge inches	Gauge mm.	Gauge proportion
00	--	16.5	1/87

Then came a great dissension in our "Battle of Gauges". One section of modellers held out for a proportion of 3.5mm/1 foot because that was the mathematically calculated gauge. The other section was of the opinion that such a gauge of itself was unimportant as at that time model wheels and truck frames were made of lead, and these were much thicker than scale. Furthermore, it was pointed out that no suitable motors of such a small size were obtainable.

To get scale appearance they therefore built oversize car bodies, giving scale overhang beyond the wheels and trucks, arriving at a scale of:

4mm/1ft = 1/76,

though the gauge remained at 16.5mm which is 3.5mm to 1ft = (1/87). These people were right, ofcourse, as long as out-of-scale wheels and trucks were obtainable only, and no suitable small motors. This gauge was named:

No.00 16.5mm in 4mm scale, i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
00	16.5	1/87	1/76

In this way the 3.5 people were now in the minority, and by and by they lost ground. They had to get a new name which was found in HO, meaning 'Half O', which became now:

No.HO 16.5mm in 3.5mm scale, i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
HO	16.5	1/87	1/87

In the meantime gauge 'O' was also checked, and according to similar considerations it was found that a gauge proportion in British style, was:

32mm/1435mm = 1/45 = 6.75mm/1 ft, which was also an inconvenient calculation. Therefore a scale of a rounded figure was adopted:

7mm/1ft = 1/43, this gauge became:

No.O 32mm in 7mm scale, i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
O	32	1/45	1/43

This regulation concerning gauge 'O' was adopted by French modellers, and a further step was undertaken in order to halve the scale exactly concerning

HO gauge in France:

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
HO	16,5	1/87	1/86

Such a development of gauge and scale is of purely historic interest and not practised by modellers today. It is worth mentioning also that in England gauge No.1 was adjusted as follows:

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
-	45	1/32	1/30.5

Returning to our HO gauge, the British gauge HO 16.5mm in 3.5mm scale was taken over by modellers in the USA, and became well known all over the world.

A construction scale of 4mm/1ft. was also developed by American modellers, and this scale was also used for the gauge proportion, so that in the USA a new gauge came into use; i.e., No. OO 19mm (OOA).

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
OO	19	1/76	1/76

A third OO gauge was in use in Germany until 1950 Model railroading was developing rapidly in this country particularly in gauge OO = 16.5mm with a gauge proportion and scale of construction both of 1/87:

No.OO 16.5mm (Germany), i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
OO	16.5	1/87	1/87

The following table gives a comparison of these 3 OO gauges:

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
00	16.5	1/87	1/76 (England)
00	19	1/76	1/76 (USA)
00	16.5	1/87	1/87 (Germany)

The German 00 gauge was actually the already known H0 gauge. For this reason I changed, in Germany, the name of this gauge to H0 in a German model railroad periodical of which I was the Editor. This change was immediately followed by other German periodicals and by German manufacturers, so that today German 00 gauge has disappeared completely.

Later, in England, out of 00 gauge in 4mm scale another gauge was introduced adhering to the original construction scale, the gauge itself being changed to 18mm instead of 19mm as in America. But for reasons of scale appearance (remember scale oversize, overhang, etc) the gauge was chosen smaller with a proportion of 1/80 and the name EM:

No. EM 18mm in 4mm scale (England), i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
EM	18	1/80	1/76

A further development out of 'O' gauge and 'EM' gauge took place in England in order to meet the demands of precisionists by creation of the gauges 'OF' and 'EMF' each having the same gauge proportion and the same construction scale, but finer details of wheels and rails. Recently it was found that regarding 'OF' gauge these details were too fine, and therefore it was recommended last year to unite 'O' gauge with 'OF' gauge creating Universal 'O' gauge according to test results of Mr Townley, in England. These new dimensions are, as a matter of fact, in pretty close accordance with the proposed European Standards.

In the direction of larger gauges than 16.5mm in the USA a gauge between 22mm and 16.5mm named 'S' was introduced: No.S $\frac{7}{8}$" (22.23mm) in 3/16" scale, i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
S	22.23	1/64	1/64

Here gauge proportion and construction scale are of the same value: 22.23mm : 1435mm = 3/16"/1ft = 1/64 which is, according to European opinion due to the use of inches, not a convenient calculation. This gauge was adopted as some people believed that such a medium gauge had much to recommend it requiring less space than O gauge but enabling more detail to be added than is possible with HO.

A similar consideration took place in Germany and in Austria where a gauge of 24mm., named ZO, is in use: No.ZO 24mm, i.e.,

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
ZO	24	1/60	1/60

It is interesting to note that here gauge proportion and construction scale are of the same value and of a rounded figure, according to European ideas.

In smaller gauges than 16.5mm mention must be made of the well known TT gauge of 12mm which was first used successfully in the USA: No.TT in 1/10"sc.

Gauge No.	Gauge mm.	Gauge proportion	Construction scale
TT	12	1/120	1/120

Finally, there are, ofcourse, quite a lot of other gauges which are of less importance, or rather, of more or less national character, it is therefore not practicable to include all these gauges in our

historical survey which already gives an idea of the existing chaos in gauges. It can therefore be well understood that now the determination of so called Model Railroad Standards has become an exigency. All these Standards were based upon test results of certain dimensions, all of them claiming safe operation, though diverging enormously. The best known Standards are:

NMRA	United States	1936
BRMSB	England	1941
MONO	Germany	1950

As the result of careful study of all these Standards and their deviations it was found that the fixed dimensions were not based upon correct physical guiding principles or terms of reference. It is really a pity that the wheels of our prototype railroads are running without difficulties and even crossing the frontiers of various countries, whilst the wheels of our models, according to differing standards are not uniform and therefore producing trouble and difficulties. Such consideration called for research for the purpose of finding directives which would represent a basis for International Standards, and I am happy to report that as a result of my research the first European Convention of Model railroaders at Ruedesheim in September, 1952 was enabled to come to an agreement for European Model-railroad Standards, named NEM (Normes for European Modelrailroaders). In this connection the attention may be drawn to the following publications of the Association of German Modelrailroaders' Clubs.

1. MINUTES covering the Standardization Conference of European Modelrailroaders at Ruedesheim, September 12th to 14th, 1952.
2. International Model Railroad Standards, by Franz Moeller, West-Berlin.
3. NEM Data Sheets, proposed in October, 1952.

The new NEM Standards are based upon an absolutely objective standardization system under NMRA, BRMSB and MONO Standards. The details of the NEM are such that though a little more coarse, it is

possible to run NMRA wheels on NEM track as well as NEM wheels on NMRA track, and their relations are in Correct reference of terms in correct order within one and the same gauge, as well as in relation to the other gauges.. The new designed and proposed NEM Data Sheets have fixed dimensions about those gauges only which are of international character such as No.1, O, S, HO, and TT. And it is ofcourse possible to re-organize all other gauges of national or any other character too, as this system covers the whole range of model gauges according to its mathematical system.

HO gauge NEM dimensions have already been proved by test results on the layout of the French Association of Modelrailroaders, at Lyon. Italy too is co-operating, whilst the Australian Model Railway Association, (AMRA) with their own Standards are going to co-operate with Europe in fixing a set of universal standards by making any necessary adjustments to either set of standards until both are the same, trusting that this will be satisfactory to an International organization of Modelrailroaders.

The founding of an International Federation of Modelrailroaders, or Union of International Modelrail roaders (UIM) is hoped to be possible at Munich (G) in Sept. 1953, being the second International Convention of Modelrailroaders of Europe. Then the prospect arises that as wheels of prototype railroads are running without difficulties from country to country, in the near future NEM wheels will also do the same. In this way a rolling wheel on a rail becomes a symbol of International understanding between many countries, and it is hoped that such a symbol will be acceptable to become the totem of the Union of International Modelrailroaders.

May, 1953.

Franz Moeller,
74 Sigismundkorso, Berlin-Frohnau
West-Berlin. Germany.

INTERIM STATEMENT OF RECEIPTS & EXPENDITURE FROM 19.5.1953 to 29.10.1953.

RECEIPTS

Bank Bal. as at 19/5/'53	£22	1	9
New Subscriptions	26	2	6
Renewals	28	15	6
Donations	5	15	1
Printed Matter		11	6
Exchange			2
	£83	6	6
Balance Brought/Forward	£50	2	-

EXPENDITURE

Postages	£12	7	2
Stationery	4	3	1
Typewriter Repairs		15	-
Printed Matter		6	11
The Journal	5	2	4
Duplicator	10	-	-
Salary (Secretary-2 years)		10	-
Bank Bal. as at 29/10/'53	45	14	2
Petty Cash on hand	2	7	10
Petty Cash Advance to Asst.Sec.	2	-	-
	£83	6	6

(Signed)Mayer H. Levy,

Hon.Treasurer.